



Award Winners from
Glenn Research Center



Research and Development

This presentation for Research and Development award winners from Glenn Research Center recognizes the scientists, engineers and innovators who have worked tirelessly to develop technologies and products that improve the lives of Americans both in the accomplishment of their aerospace mission and here on Earth. Their diligence and ingenuity have led to the Center receiving 100 of R&D Magazine's R&D 100 Awards. As noted on the magazine's Web site, the awards are recognized as a mark of excellence known to industry, government, and academia as proof that these products are the most innovative ideas of the year.

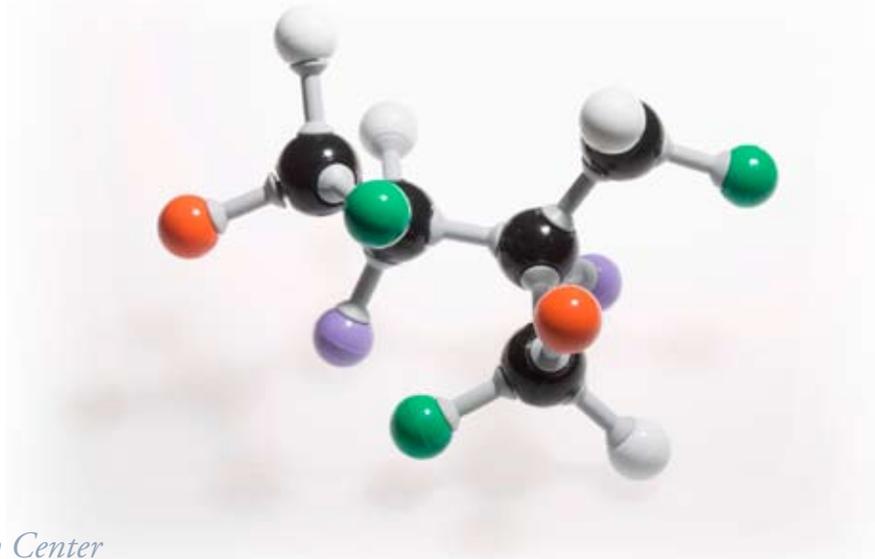
- 1966 *Hexagonal Bearing Material*
Robert L. Johnson, Donald H. Buckley
- 1967 *Tungsten RHC*
William D. Klopp, Peter L. Raffo, Walter R. Witzke
- 1968 *Ferromagnetic Superalloy*
*John C. Freche, Richard L. Ashbrook, Stanley J. Klima, Robert L. Dreshfield,
Gary D. Sandroock, Anthony C. Hoffman*
- 1968 *Refractory Fiber Superalloy*
Donald W. Petrusek, John W. Weeton, Robert A. Signorelli
- 1970 *Electron Bombardment Ion Thruster*
Harold R. Kaufman, William R. Kerlake, Edward A. Richley
- 1971 *Electron Beam Chemistry*
Warren H. Philipp, Charles E. May, Stanley J. Marsik, Robert A. Lad



R&D 100 Award Winners

- 1972 *Floating Zone Fiber Drawing Process*
Leonard J. Westfall
- 1973 *Gas Lubricated Self-Acting Seals*
John Zuk, William F. Hady, Lawrence P. Ludwig, Robert L. Johnson
- 1973 *Nickel-Based Photographic Process*
Charles E. May, Stanley J. Marsik, Robert A. Lad, Warren H. Philipp
- 1974 *Oxidation-Resistant Self-Lubricating Bearing Material for Use at Temperatures from 25 to 900 °C*
Harold E. Sliney
- 1974 *High Strength Nickel Base Alloy, WAZ-16, for Applications Up to 2200 °F*
William J. Waters, John C. Freche
- 1975 *High-Efficiency Flat-Plate Solar Energy Collector*
Frederick F. Simon
- 1975 *Advanced Ball Bearing Design for 3-Million DN Operation Bearings and Mechanical Power*
Erwin V. Zaretsky
- 1976 *Ceramic Thermal Barrier Coating*
Curt H. Liebert, Jack E. Brown, Stephen A. Stecura
- 1976 *Thickness Measuring Radar*
Dale W. Cooper, John Heighway
- 1976 *Continuous Production Cyclotron Target*
James W. Blue
- 1977 *Automatic Directional Air Sampler (Air Scout)*
Robert B. King, J. Stuart Fordyce, John Toma, James Deyo

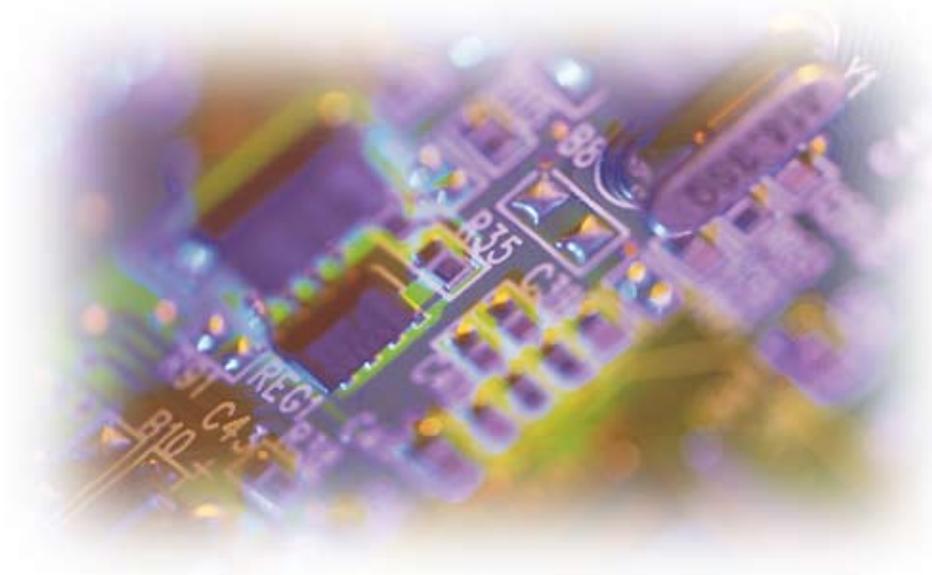
- 1977 *Process for the Restoration of Ball and Roller Bearings*
Erwin V. Zaretsky
- 1977 *Airborne Atmospheric Sampling System*
Porter Perkins, Ted W. Nyland, Marvin Tiefermann
- 1977 *Second Generation PMR Polyimides*
Tito T. Serafini, Raymond D. Vannucci, William B. Alston
- 1977 *Very Lightweight Multiuse Flexible Sheet, High Voltage Capacitor*
Norman Grier, Ira T. Myers
- 1978 *“Low Temperature Alloys” (Low Chromium Stainless Steel)
(Tough-Strong Iron Alloy)*
Charles A. Barrett, Joseph R. Stephens, Charles A. Gyorgak, Walter R. Witzke
- 1978 *Westinghouse Transistor, Models D60T and D62T*
Gale R. Sunberg
- 1978 *Superalloy Strength Enhancement Fabrication Process*
William J. Waters, John C. Freche



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- 1978 *Voice Output Solar Energy Reporter*
Robert L. Miller, Burdell L. Detterman
- 1978 *High Efficiency Practical Magnetic Heat Pump*
Gerald V. Brown
- 1979 *Corrosion Resistant Thermal Barrier Coating*
Stanley R. Levine, Robert A. Miller, Philip E. Hodge
- 1979 *Redox Energy Storage System*
Lawrence H. Thaller
- 1979 *NASVYTRAC Multiroller Traction Drive*
*Algirdas L. Nasvytis, Erwin V. Zaretsky, Stuart H. Loewenthal, Neil E. Anderson,
Douglas A. Rohn*
- 1980 *MA6000E Oxide Dispersion Strengthened Super Alloy*
Thomas K. Glasgow
- 1980 *Magnetic Material Analyzer Model-1*
James E. Triner
- 1980 *Cuk Capacitive Coupled Buck-Boost Switching Converter*
James E. Triner
- 1981 *Large Propeller Type Wind Energy System*
William H. Robbins, Ronald L. Thomas, D. Baldwin, Patrick M. Finnegan
- 1982 *CLEFT (Cleavage of Lateral Epitaxial Films for Transfer)
Process for Fabricating Solar Cells*
Henry W. Brandhorst

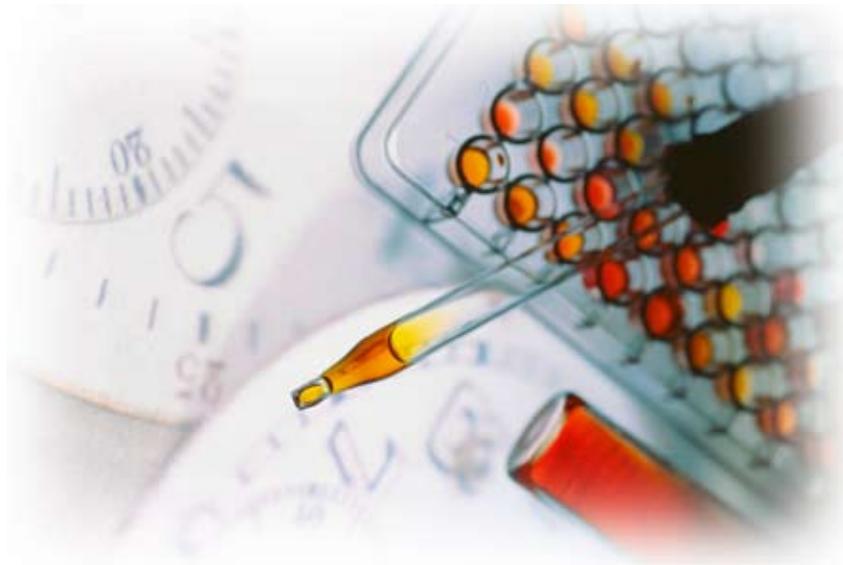
- 1982 *Ideal MIAMI (Microwave Ice Detector and Accretion Measurement Instrument) Model 92880/92881*
Robert F. Ide
- 1982 *Ultralightweight Printed Circuit Rectenna*
James E. Triner
- 1983 *Process for Producing Cubic “Sic” Devices*
Shigehiro Nishino, Herbert A. Will, J. Anthony Powell
- 1983 *System for High-Speed Balancing of Shafts*
David P. Fleming
- 1983 *High Frequency, High Power Capacitor*
David R. Renz
- 1983 *High Speed Switch Matrix System*
Ernie W. Spisz



R&D 100 Award Winners

- 1984 *ARDS—Analysis of Rotor Dynamic Systems*
David P. Fleming
- 1984 *High Power Solid State Remote Power Controllers*
John C. Sturman, Robert W. Gott
- 1984 *Photo-Optical Blade Vibration Data Acquisition System*
Louis J. Kiraly
- 1984 *Multiple-Beam Antenna System*
Royce W. Myhre
- 1985 *Servomechanism for Propeller-Pitch Change*
Stuart H. Loewenthal, Bruce M. Steinetz
- 1985 *Communications Traffic Processor*
Russell J. Jirberg
- 1985 *Rotary Power-Transfer Device*
David D. Renz
- 1985 *Transmit Module*
Godfrey Anzic, Denis J. Connolly, Thomas J. Kascak
- 1986 *NASA Lube PS200*
Harold E. Sliney
- 1986 *Arc Spray Monotape Process*
Leonard J. Westfall
- 1986 *Thermal Barrier Coating System*
Stephan Stecura

- 1986 *UDF and Prop-Fan*
David A. Sagerser, Edward T. Meleason
- 1987 *Barium Dispenser Thermionic Cathode*
Edward G. Wintucky
- 1988 *Long Cycle Life Nickel/Hydrogen Cell Battery*
*John J. Smithrick, Lawrence H. Thaller, Michelle A. Manzo,
Olga D. Gonzalez-Sanabria*
- 1988 *Sensor Failure Accommodator*
Walter C. Merrill
- 1989 *Multistage Depressed-Plate Collector Klystron*
James A. Dayton, Jr.
- 1989 *Monolithic Optical Integrated Receiver*
Kul B. Bhasin



R&D 100 Award Winners

- 1989 *Laser Velocimetry Data Reduction*
Mark P. Wernet
- 1990 *High Temperature Flexible Ceramic Wafer Seal*
Bruce M. Steinetz, Paul J. Sirocky
- 1991 *Inert Gas Post-Cured Crosslinked Polymer*
Kenneth J. Bowles, Carl E. Lowell
- 1991 *PbCr Strain Gauge*
Jih-Fen Lei, David R. Englund
- 1991 *Optical Fiber Current Sensor*
Richard L. Patterson
- 1993 *Pioneer II Melt Modulation (TM) Fiber Growth System*
- 1995 *Advanced Communications Technology Satellite (ACTS)*
*Richard T. Gedney, Rodney Knight, Ronald J. Schertler, Roberto J. Acosta,
Peter A. Vrotsos, Thomas H. St. Onge*
- 1995 *Automatic Hydrogen Gas Leak Detection System*
Gary W. Hunter
- 1995 *CARES/LIFE Software*
Noel N. Nemeth, Lesley A. Janosik, John P. Gyekenyesi, Lynn M. Powers,
- 1995 *PdCr Thin Film Strain Gauge*
Jih-Fen Lei
- 1995 *Affordable Fiber Reinforced Ceramic Composites*
Mrityunjay Singh

- 1996 *Single Transducer Ultrasonic Imaging Method*
James R. Bodis, Donald J. Roth
- 1998 *Convolutd TC's for Ceramics Temperature Measurements*
Jih-Fen Lei
- 1999 *Tempest/Embedded Web*
Joseph G. Ponyik, David W. York, Lisa M. Lambert, Maria Babula, Richard Tyo
- 1999 *Affordable, Robust Ceramic Joining Technology (ArcJoint)*
Mrityunjay Singh
- 1999 *Tracker Software*
Robert B. Klimek, Theodore W. Wright
- 1999 *Large Area 3-D Surface Profiling Using Only Focused Air Pulses*
Donald J. Roth, James R. Bodis, Harold E. Kautz



R&D 100 Award Winners

- 2000 *Polymide Extended Shelf Life Technology*
William B. Alston
- 2000 *Gamma Titanium Aluminides*
Paul A. Bartolotta
- 2000 *GENOA*
Christos C. Chamis, Pappu L. Murthy
- 2001 *Ecoceramics*
Mrityunjay Singh
- 2001 *Ring Cusp Ion Engine*
James S. Sovey, Vincent K. Rawlin, Robert F. Roman
- 2001 *Silicon/Mullite/BSAS and Silicone/Mullite + BSAS/BSAS ECB's*
Dennis S. Fox, Kang N. Lee, James L. Smialek, Narottam P. Bansal, Craig Robinson
Robert A. Miller, Elizabeth J. Opila, Nathan S. Jacobson
- 2001 *Sylramic iBn SiC Fiber*
James A. DiCarlo, Hee Mann Yun
- 2002 *Atomic Oxygen Art Restoration*
Bruce A. Banks, Sharon K. Miller
- 2002 *Numerical Propulsion System Simulations (NPSS)*
Troy R. Hauser, Tammy M. Blaser, Patricia A. Keith, Joseph Beins, Gayle C. Roth,
Cindy G. Naiman, Thomas M. Lavelle, Colleen A. Withrow, Denise M. Varga,
James L. Felder, Bret A. Naylor, Gregory J. Follen, Michael P. Binder,
Paulette J. Ziegfeld, Tina Gilliotti Grzincic, Catherine M. Krenek, William Vic,
Arthur Lehmann, Scott E. Townsend, William R. Pavlik, Michael J. Trivison,
Stephen W. Ryan, Keith G. Marsteller, Fermin R. Gomez, Louis M. Handler,
Daniel R. Vrnak, Jeffery C. Follo, Austin L. Evans, Donald E. Van Drei

- 2003 *PS/PM 300 Oil-Free Lubricant*
Christopher DellaCorte, Brian J. Edmonds
- 2003 *DMBZ-15 High-Temp Polyimide*
Kathy C. Chuang, Raymond D. Vannucci
- 2003 *MASS Software*
*Timothy A. Reckart, Theodore W. Wright, Kevin M. McPherson,
Richard Delombard, Kenol Jules, Eugene Liberman, Nissim Lugasy,
Kenneth Hrovat, Eric M. Kelly*
- 2003 *Hi-Temp, Hi-Load Radial Magnetic Bearing*
*Benjamin T. Ebihara, Gerald T. Montague, Mark J. Jansen, Andrew J. Provenza,
Ralph H. Jansen, Alan B. Palazzolo, Albert F. Kascak*
- 2003 *Pilot Weather Advisor/InFlight With ViGYAN*
*Glenn R. Lindamood, Konstantinos S. Martzaklis, Teresa L. Monaco,
Allen D. Tucholski*
- 2003 *Hybrid Icing System With Cox & Co*
Andrew L. Reehorst, Dean R. Miller



R&D 100 Award Winners

- 2004 *Nanometer Step Height Standard*
Phillip B. Abel, Andrew J. Trunek, Anthony J. Powell, Philip G. Neudeck
- 2004 *Morrison Motor*
Carlos R. Morrison
- 2004 *ME3 Advanced Turbine Disk Alloy*
Michael V. Nathal, Timothy P. Gabb
- 2005 *Polyimide Rod-Coil Block Copolymers as Membrane Materials for Ion Conduction*
Mary Ann Meador, James D. Kinder
- 2005 *Glenn Refractory Adhesive for Bonding and Exterior Repair (GRABER)*
Mrityunjay Singh, Tarah P. Shpargel
- 2005 *Multi-Parameter, MicroSensor-Based Low False Alarm Fire Detection System (MMFDS)*
Gary W. Hunter, Robert C. McKnight, Paul S. Greenberg, Jennifer C. Xu, Terry L. Ferrier
- 2005 *NESSUS V8 Probabilistic Engineering Analysis Software*
Shantaram S. Pai

2006 *L3 Traveling Wave Tube*

Jeffrey D. Wilson, Daniel Williams, Rainee N. Simons

2007 *Defect Clustering Thermal and Environmental Barrier Coatings (TEBCs) for Si-Based Ceramic Turbine Engine Components*

Dongming Zhu, Robert A. Miller, Narottam P. Bansal

2007 *High Speed Electro-Mechanical Shutter for Imaging Spectrographs*
Quang-Viet Nguyen

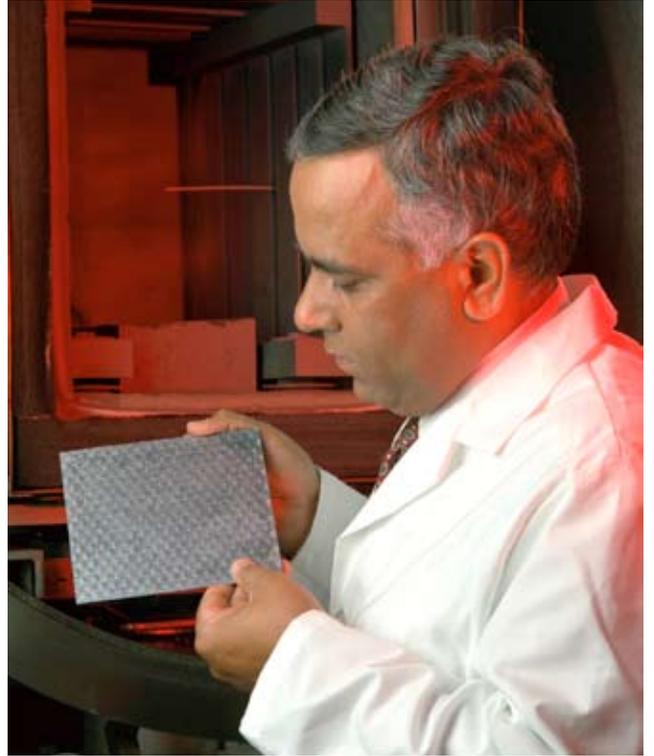
2007 *Antenna Near-Field Probe Station Scanner (ANFPSS)*

Richard Q. Lee, Kevin M. Lambert, Felix A. Miranda, Afroz J. Zaman, William G. Darby





Long Cycle Life Nickel/Hydrogen Cell Battery



Affordable Fiber Reinforced Ceramic Composites



PdCr Thin Film Strain Gauge



CARES/LIFE Software



Convolutd TC's for Ceramics Temperature Measurements



Tempest Embedded Web



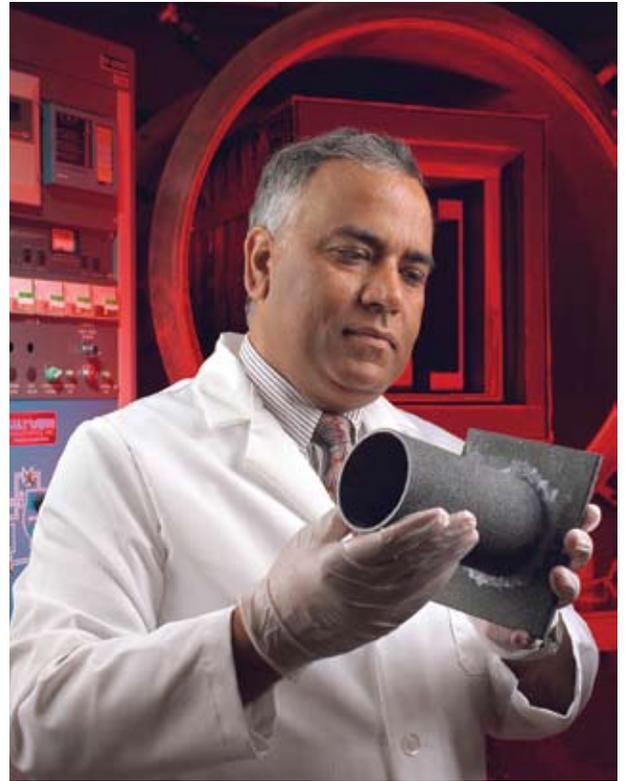
Polymide Extended Shelf Life Technology



Large Area 3-D Surface Profiling Using Only Focused Air Pulses



Sylramic iBn SiC Fiber



Affordable Robust Ceramic Joining Technology



Gamma Titanium Aluminides



ME3 Advanced Turbine Disk Alloy



Numerical Propulsion System Simulations



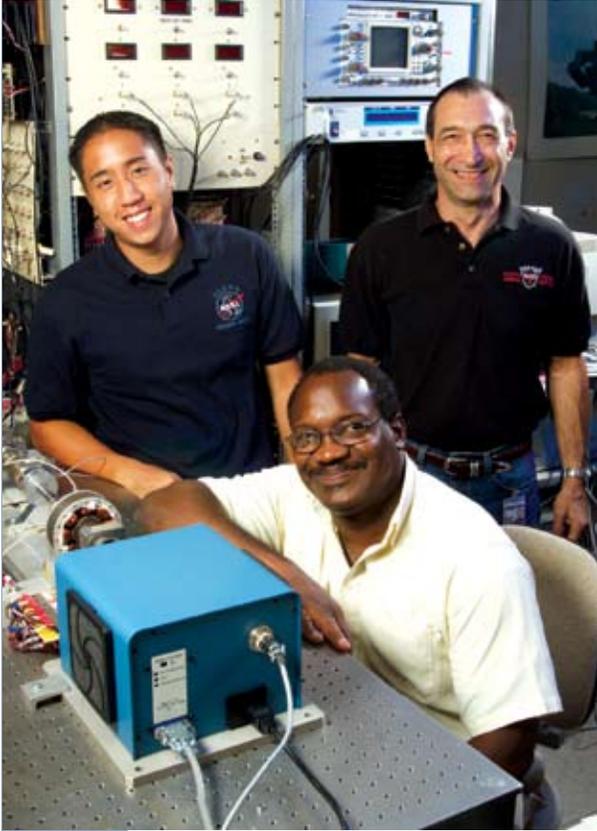
PS/PM 300 Oil-Free Lubricant



Atomic Oxygen Art Restoration



DMBZ-15 High-Temperature Polyimide



Morrison Motor



Pilot Weather Advisor InFlight With ViGYAN



MASS Software



Nanometer Step Height Standard



Glenn Refractory Adhesive for Bonding and Exterior Repair



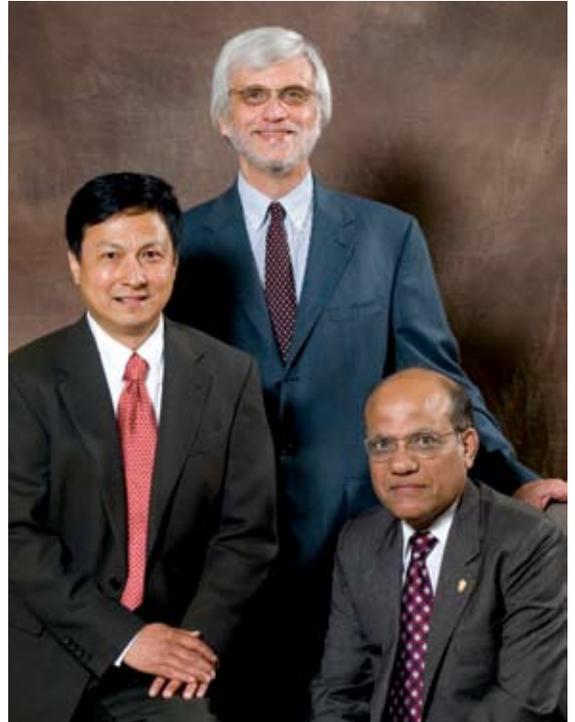
Polymide Rod-Coil Block Copolymers as Membrane Materials for Ion Conduction



Multi-Parameter, MicroSensor-Based Low False Alarm Fire Detection System



Antenna Near-Field Probe Station Scanner



Defect Clustering Thermal and Environmental Barrier Coatings (TEBCs) for Si-Based Ceramic Turbine Engine Components

